DEPARTMENT OF INDUSTRIES

BOMBAY PRESIDENCY

ANNUAL REPORT

1929-30

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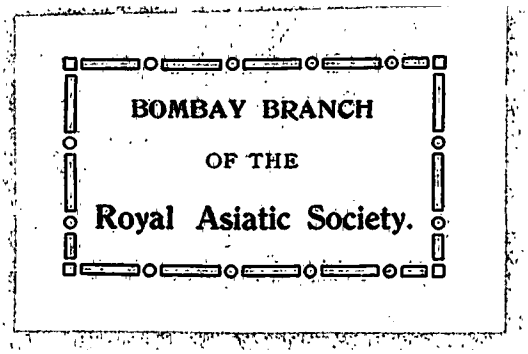

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OFFICE OF THE DIRECTOR OF INDUSTRIES,
OLD CUSTOM HOUSE,
Bombay, 20th May 1930.

FROM

P. B. ADVANI, ESQ., M.Sc., M.I.E.,
Director of Industries, Bombay;

To

THE SECRETARY TO GOVERNMENT,
General Department,
Bombay.

Subject.—Annual Report of the Department of Industries, 1929-30.

Sir,

I have the honour to submit the Annual Report of the Department of Industries for the year 1929-30.

STAFF

2. I held charge of the office of the Director of Industries for the whole year. In July 1929 Government were pleased to create an appointment of the Industrial Chemist and Dr. M. S. Patel, M.Sc., Ph.D. (Cornell), was appointed to hold it. Dr. Patel joined the appointment on 1st August 1929. Government were also pleased to create an appointment of the Industrial Engineer at the close of the year and Mr. M. E. Haskell was appointed to hold the post. Mr. Haskell took up the duties of his post on 16th May 1930.

During the year under review the other staff of the Department comprised 1 Superintendent of the Hand Weaving Institute, Poona, and his subordinates, 4 Weaving Assistants (Inspectors of Weaving Schools and Demonstrations), 2 Dyeing Demonstrators, 21 Weaving Masters, 13 Demonstrators and 10 clerks. With the exception of the clerks, all the other men worked in the various weaving centres in the Presidency including Sind.

EXPENDITURE

3. The expenditure incurred by the Department of Industries during the financial year 1929-30 and the three preceding years was as follows :—

				Rs.
1926-27	..	..	..	88,341
1927-28	..	..	..	69,472
1928-29	..	..	..	77,669
1929-30	..	..	..	1,05,924

During the year under report receipts from the sale of cloth produced at the various weaving schools and demonstrations of the Department amounted to Rs. 4,338. The net expenditure of the Department for 1929-30 was, therefore, Rs. 1,01,586.

TOURING

4. During the year I was out of my headquarters for 76 days and visited the following places : Nasik, Chandor, Jalgaon, Dharangaon, Parola, Ahmednagar, Poona, Chikhli, Surat, Broach, Anand, Samerkha, Alindra, Satara, Ogalewadi, Vita, Kirloskarwadi, Hukeri, Gadag, Gajendragad, Belgaum, Bhivandi, Bijapur, Bagalkot, Junnar, Karad, Hubli, Mundhwa, Karachi, Tatta, Kotri, Budhapur, Hyderabad, Hala, Nasarpur, Sukkur, Lakhi, Larkana and Lahori.

My visits to Poona were in connection with the organisation of the Central Hand Weaving Institute and to other places in connection with the inspection of Weaving Schools and Demonstrations and Dyeing Demonstrations of this Department and inspection of the industries existing there.

GENERAL INDUSTRIAL OUTLOOK DURING THE YEAR

5. The trade depression continued unabated. The Textile Industry passed through a very bad time during the year. Out of the 219 mills in the Bombay Presidency 81 are located in the Island of Bombay. Cotton Mills strike in Bombay which had been settled in 1928 broke out again twice in 1929 and the mills were idle for 210 days in the year, the number of workmen on strike being 1,25,000. The industry suffered generally during the year from foreign competition, specially Japanese. Bombay mills were more affected than the up-country mills. It is expected, however, that the revised increased tariff will enable the industry to build itself up, so that when the period for which the tariff has been increased terminates they will be able to face competition.

The condition of the Woollen Industry was unsatisfactory. In 1920 there were 5 woollen mills in this Presidency with a paid-up capital of approximately Rs. 1·44 crores. In the beginning of the year 1929 there were only 3 woollen mills. During the year under report one of the mills

with paid-up capital of Rs. 13 lakhs stopped working, so that at the end of the year there were only two woollen mills with paid-up capital of Rs. 76·5 lakhs.

There is only one sugar factory in this Presidency at present and it is reported that this factory worked at a loss during the year under report.

Sugar, both crystallised and molasses, to the extent of Rs. 7·64 crores was imported into Bombay and 64,000 acres of land are under sugar-cane cultivation. There can be little doubt that there is a very great field for sugar industry in this Presidency. Foreign competition, however, is extremely keen and the whole question requires to be investigated by experts. This matter is now under the consideration of Government. The import duty on sugar has just been increased from Rs. 4-8-0 per cwt. to Rs. 6-0-0 per cwt. and it is hoped that it may help the industry to expand.

During the year there were three paper mills working in this Presidency. The output of these 3 concerns during the year 1929 was 2167 tons of paper having a value of approximately Rs. 8 lakhs. It is gratifying to note that the production of these paper mills increased by 50 per cent. during the year 1929.

Engineering concerns, specially those engaged in the manufacture of agricultural implements, fared on the whole well during the year and there have been some extensions.

The Match Industry helped by the import duty is now firmly established in the Presidency. There are at present 16 match factories in the Presidency. The industry as a whole did fairly well during the year.

During the year under review, 1 tanning company, 1 factory dealing in cement and clay, 5 cotton mills, 4 cotton ginning factories and 1 factory for regenerating electric bulbs, with total paid-up capital of Rs. 80·7 lakhs went into liquidation.

6. During the year 1929, 134 new concerns started working or were sufficiently extended so as to come under the Indian Factories Act. Important amongst these were 10 cotton mills, 37 cotton gins, 6 cotton presses, 9 oil mills, 2 hosiery concerns, 7 rice mills and 2 tile manufacturing concerns.

Despite the fact that there was general trade slump, during the year under review a number of new companies were floated. 10 of these were in connection with cotton mills with authorised capital of Rs. 1·18 crores; 1 in connection with cotton gin and press with authorised capital of Rs. 5 lakhs; 1 in connection with tanneries with authorised capital of Rs. 10 lakhs; 6 in connection with cinema films with authorised capital of Rs. 34·5 lakhs, making a total authorised capital of Rs. 1·7 crores.

POLICY

7. The Industries Committee, 1926-27, recommended that the following may be the main functions of the Department of Industries :—

(1) The supply of industrial and commercial intelligence to private enterprises. This should include the obtaining of information regarding trade openings in the province or elsewhere for any goods produced in this Presidency.

(2) Technical advice and assistance to cottage industries and small organised industries, including the introduction of new methods and improved implements. This should include the development of new spare-time occupations in rural areas.

(3) Industrial education, including weaving schools and demonstrations in cottage industries.

(4) Survey of all industries in the presidency, excepting major industries, and an organisation for keeping information on this subject up-to-date. This will include the maintenance of a record of producers and so will connect with the commercial intelligence work specified under the first heading.

(5) Industrial exhibitions, including the industrial sections of agricultural or other exhibitions.

In addition to the above functions, the work in connection with Mines and Minerals was transferred recently from the Department of Agriculture to the Department of Industries.

During the year under review, the Department has endeavoured to carry out the above functions so far as its limited staff and resources have permitted.

COMMERCIAL AND INDUSTRIAL INTELLIGENCE

8. This branch of the Department continued to be both popular and useful.

As usual, inquiries from abroad for opening commercial relationships with Indian firms were transferred to the Director General of Commercial Intelligence and Statistics, Calcutta. Inquiries from Indian firms for opening trade relationships with British firms were transferred to H. M. Trade Commissioner, Bombay.

The inquiries received and dealt with in this office may be divided in the following main groups :—

(*a*) Statistical, *i.e.*, asking for figures of imports and exports of raw materials as well as of finished goods.

(*b*) Names of dealers in and sources of raw materials.

(*c*) Names of Indian manufacturers of various articles.

(*d*) Miscellaneous.

Some of the miscellaneous inquiries attended to are given below—

(1) The Empire Marketing Board obtained the lease of a shop in Glasgow and it was arranged to place it at the disposal of the different parts of the Empire in rotation. India was accordingly given occupation of it from 31st March to 12th April 1930. The object was to display products of India and sell samples of same in order to introduce the goods on the market and encourage the retailers to stock them. The Indian Trade Commissioner in London made inquiries through the Director General of Commercial Intelligence and Statistics, Calcutta, whether canned fruits such as mango and guava pulp could be obtained for display and sale at the Shop in Glasgow. A certain price was fixed for the wholesale consignments. The Department of Industries addressed the Canning Factories in North Kanara and the Oriental Cannery Co. of Ankola, the largest manufacturers of canned fruit, and they were informed of the same and were requested to send their products to the Indian Trade Commissioner direct. It is gratifying to note that the Company undertook to display its products at the Sales room in Glasgow and the result will be watched with interest in view of finding over-seas market for these articles.

(2) The Government of the Punjab offered a prize of Rs. 2,000 for the design of an improved Persian Wheel. The Director of Agriculture of that Province brought to the notice of this Department the notification referred to above. In addition to that, Messrs. Tata Iron & Steel Co., Ltd., Calcutta, announced that their firm would give a prize of Rs. 500 to the party whose design would be approved by Government. The Department of Industries, Bombay, brought these notifications to the notice of well known iron foundries in Bombay as well as engineering works in the mofussil.

(3) A number of inquiries were received for supply of information regarding financial standing, business integrity and other particulars of firms, associations and individuals from different officers. Out of these, 5 were from the Director General of Commercial Intelligence and Statistics, Calcutta, 2 from the Director of Industries, Punjab, 1 from the Political Agent in the Southern States of the Central India and Malwa, and 1 from Government. Information regarding these firms, etc., was collected and supplied.

(4) The Poona Central Co-operative Bank wanted certain information in connection with the export of myrabolans from India. The main point from which the Bank sought the information was the way in which myrabolans are exported, *i.e.*, whether in whole or in crushed form; if they are exported in crushed form, where they are crushed. They also wanted to know whether any tanning materials can be prepared in India out of myrabolans. All the necessary information was supplied to them.

TECHNICAL ADVICE AND HELP TO ORGANISED INDUSTRIES

9. **Technical Advice.**—Technical advice was given during the year to a number of industrialists by letter, personal interviews and personal visits to factories. I give below some of the inquiries attended to :—

(1) A paper mill desired advice in connection with their power plant. I visited the mill and discussed with the Proprietors the question of cost of Hydro-Electric Power *versus* the power generated by their own steam turbine plant and their existing steam engine. The whole question was gone into in great detail and is under the consideration of the Proprietors.

(2) A firm in Ahmedabad desired to know the process for the manufacture of gas mantles. The relevant information was supplied.

(3) A Merchants' Association, Bombay, and an inquirer from Panvel, made inquiries for the industrial uses of rice husk. The necessary information was supplied.

(4) A firm in Bombay contemplated starting a soap factory. A representative of the firm called and discussed the question and requested that details in connection with the process, plant and layout may be supplied to the firm. A full estimate for manufacturing about 30 tons of bar soap per month was prepared and supplied.

(5) A firm in Bombay wanted to know the process of extracting oil from oily yarns and cotton waste so that the clean cotton waste could be used for other purposes. A complete process was given together with the layout, machinery, etc. The firm was also supplied names of manufacturers of machinery required in the process.

(6) A firm in Ahmedabad wanted technical advice for wood distillation. The firm made experiments in wood distillation on a small scale with a retort type plant of a capacity of 400 lbs. of wood. They were successful in getting good wood charcoal, wood tar or wood pitch. They also got manufactured ink from the wood pitch. The firm then tried to build a plant with a capacity of 15 tons of wood. In this plant they did not use the retort but had a pit dug and the heating system fixed at the bottom. The plant failed to give the necessary results, the main cause being the difficulty to get proper draught. A representative of the firm came to consult the Department on the following points :—

Improvements in the plant ;
Use of gas ;
Further uses of wood pitch besides printing ink manufacture ;
Increase of yield of charcoal.

Improvements of the draught system were suggested ; a rough sketch of the grate in connection with the arrangement for gas burners was given to him ; and the uses of wood pitch that were suggested were wood preservation, black cement, varnishes, etc.

(7) A firm in Nasik wanted to establish an oil mill. An estimate for one expeller unit oil mill in the mofussil working for 24 hours a day for 25 days a month was prepared in detail and supplied to the party concerned.

(8) An engineer from Ahmedabad wanted information regarding charcoal making. Information was supplied to him in note-form by this Department.

(9) An inquirer from Karachi wanted to know the names of small industries which he could start with a capital of Rs. 2,000 to Rs. 3,000 on cottage basis. He was given the necessary advice.

(10) The proprietor of a motor service at Pandharpur who had been helped by this Department in the previous year in connection with starting a ginning factory, etc., requested for preliminary information and advice in connection with a small cotton mill. The necessary information was given to him.

(11) A firm in Bombay, manufacturing flooring tiles, experienced difficulty in getting suitable wood for crates for tiles. The difficulty was this that when a crate is prepared the wood imparts its colour to the wet tiles. Inquiries were made with the Forest Economist and the Chief Conservator of Forests. Both these officers suggested certain types of wood which would not impart their colour to the tiles. Names of these woods were communicated to the inquirers.

(12) Two gentlemen, one from Viramgam and another from Mehidpur (B.B. & C.I. Ry.), wanted particulars of machines for knitting socks and stockings. They were supplied with particulars of the machines and their cost, capacity, etc.

(13) A firm in Broach wanted advice and information in connection with the starting of a knitting mill at a convenient centre. The required information was given. They were also supplied with the names of hosiery machinery manufacturers in England and Germany as well as names of the firms who deal in this kind of machinery here. Books on hosiery manufacture were also recommended.

(14) A firm in Sholapur wanted to establish a paper mill having a capacity of 10,000 tons of paper per annum. They wanted a complete scheme on the subject and as such they requested the Department to supply to them a detailed report on the following points : Site, raw materials, estimate of machinery, manufacturers of machinery, process of the manufacture of paper, running expenses, capital to be invested in the industry, etc.

A similar inquiry was received from a Chamber of Commerce in Bombay.

Information was collected on all the points and supplied to the inquirers. They were also referred to certain publications issued on the subject.

(15) The Director of Industries, United Provinces, Cawnpore, was considering the question of the application of hydro-electricity to handloom weaving. He consulted the Department as to whether it is possible to drive wooden handlooms with electrical power. The Department advised that officer that no electric motor has been devised to operate the wooden handloom now in use and that the present wooden handloom will not stand higher speed at which the electric motor, in order to be economical, must run it. Looms installed in mills are different; they are made of iron and are specially designed to withstand high speeds and are driven in many cases by electric motors.

The Department was further consulted in connection with the supply of warps for the use of small factories and individual power looms. A complete unit of preparatory machines suitable to feed 40 to 50 power looms was prepared in the office and supplied to that officer.

(16) The Director of Industries, United Provinces, Cawnpore, requested the Department to express its opinion whether hydro-power can be used to run a spinning jenny. He further wanted to know whether any improvement can be made in the ordinary hand jenny so as to become suitable for the use with water power.

It was suggested to him that if suitable spinning machinery is installed there was no reason why same may not be driven by gearing, shafts and belts direct from the main-shaft propelled by a water turbine instead of water power being converted into electrical energy and machines run by electric motors.

(17) An inquirer from Udvada wanted to know as to how he could utilise the surplus power of his small rice and flour mill. After making enquiries as to the raw materials available in the vicinity it was suggested to him that preparation of hemp fibres from raw hemp would be proper industry. He was given full particulars about the machinery required and details of its working.

(18) An industrialist from Ahmednagar wanted to increase the capacity of his soap factory. He, therefore, wanted the Department to express its opinion as to the extent to which soap industry can prosper in the Ahmednagar District. Approximate extent of soap consumption in the District was derived by calculations and he was informed that as long as there was no other factory in the District he could without much risk increase the weekly capacity up to 50 to 60 maunds of soap.

(19) A chemist of a dyeing factory saw the Industrial Chemist and wanted suggestions on the following points :—

(*a*) Reclaiming of tin as tin chloride and antimony as the sulphide from the rejected " White Metal."

(*b*) Manufacture of lead acetate from litharge and calcium acetate and sulphuric acid directly.

(*c*) Utilisation of waste liquors from chrome dyeing.

(*d*) Simple and economical process for the manufacture of phosphoric acid from bones that can be used in the local match factories.

The necessary information was supplied to him.

(20) A representative of a firm in Bombay brought a mineral which he thought contained gold. The mineral was examined and found to contain minute particles of pyrite enclosed in aluminate and silicate minerals. The sample was tested in his presence and he was shown that there was no gold in the mineral.

(21) A Crayon manufacturing firm wanted information as to how to improve its product. The samples were tested in the laboratory and the main defects were determined and from the results obtained suggestions were made as to how to improve the product. The sample submitted by the firm after following some of the suggestions showed that the product had improved.

(22) A soap making firm in Karachi wanted the Department to help them in improving the quality and colour of their product and also wanted a working process for the preparation of rosin soap to be mixed with ordinary soap during the process of manufacturing ordinary bar soap. Methods of improving the quality and colour of soap and working process for the preparation of rosin soap were worked out in the laboratory and supplied to the firm.

(23) A firm in Bombay wanted a working process for preparing white pepper from black pepper. The process has been successfully worked out and details have been supplied to the firm in question.

(24) An engineer interested in cements and cement products wanted a process for the manufacture of silicic acid. He was given a demonstration in the laboratory of the fundamental principles involved in the process of preparing silicic acid from commercial silicate of soda.

(25) The proprietors of an oil mill in the mofussil wanted to know as to how to decolourise and deodourise groundnut oil pressed in their mills. The party was given a demonstration in the laboratory of the simple methods and fundamental principles involved in bleaching and deodourising of oils.

10. **Personal Interviews.**—I gave some 239 and the Industrial Chemist some 46 interviews to people interested in industries. Following are the subjects discussed at these interviews :

(1) Cinema industry.
(2) Starting of a match factory.
(3) Brick and tile factory.
(4) Varnish making on cottage industry basis.
(5) Gold thread industry.
(6) Soap making.

(7) Information about leather trade.
(8) Railway freights—concession rates for cement tiles.
(9) Railway freights—concession rates for magnesia.
(10) Confectionery factory—Representative of a wellknown English firm of confectioners saw me for some information in connection with their proposal to establish a confectionery factory here.
(11) Brush making.
(12) Possibilities of starting a cotton mill in Sind.
(13) Eau-de-Cologne and perfumery industry.
(14) Fishery industries—such as oil expression and canning.
(15) Sugar industry.
(16) Vegetable oil industry—The representative of a big English firm discussed with me the advisability of buying a local mill.
(17) Starting of a small groundnut oil factory.
(18) Manufacture of vegetable ghee.
(19) Manufacture of essences.
(20) A turbine plant for a mill.
(21) Flour milling on a small scale.
(22) Starting of a perfumery factory—Representative of a French firm saw me and discussed with me the possibilities of starting a factory here.
(23) Artificial pearl making.
(24) Aloe fibre industry.
(25) Utilisation of surplus water in a Butter factory.
(26) Establishment of a small silk weaving factory.

11. **Visits to Works.**—Both the Director and the Industrial Chemist visited a number of factories during the year both in and outside Bombay.

12. **Assistance to Industries.**—I give below some examples of assistance rendered to small organised industries.

(1) Ogale Glass Works, Ltd., Ogalewadi, Karad, started manufacturing enamelled boards in 1925. The Director of Industries requested the Works to send samples of their workmanship and supply particulars regarding rates, etc. The firm was recommended to Government in the Public Works Department. Government in the Public Works Department issued a circular in 1926 to all its officers to give a trial to the enamelled boards manufactured by the Works. After having satisfied themselves Government in the Public Works Department issued orders during the year under report asking officers of that Department to purchase their requirements from the Company provided the quotations of the Company compare favourably with those of other suppliers.

(2) Messrs. Bharat Flooring Tiles Manufacturing Co. approached this Department for obtaining first class freight classification instead of second class for cement flooring tiles over the Railways in

this Presidency. The firm was recommended to the Railways concerned for favourable consideration with the result that the Railways agreed to grant the necessary concession.

(3) Ogale Glass Works experienced difficulties in obtaining cheap and suitable packing materials to pack their glass-ware. They were informed that in the United Provinces glass factories use reeds for this purpose. The Company approached this Department for supply of a sufficient quantity of this material from the forests of this Presidency. The firm was supplied with the necessary quantity of reeds. They are making trials with these reeds and have promised to report results in due course.

(4) The Cooper Engineering Works, Satara, manufacture agricultural implements, such as ploughs, sugarcane crushers, etc., in this Presidency. The Works were visited by the Director in November last. The firm approached this Department to recommend them to the Directors of Agriculture and Industries in other provinces. A letter was addressed to all the Directors of Agriculture and Industries recommending the firm. The excellence of the products of the Company was particularly brought to the notice of these officers.

(5) A firm in Bhivandi manufacturing machinery for rice mills approached this Department to obtain certain land revenue concessions on a plot of land adjoining to their Works with a view to extend their factory. The application in question was forwarded to the Collector of Thana with a recommendation from this Department for disposal.

(6) Ogale Glass Works, Ltd., represented that they should be provided with a Railway siding. The Director visited the Works in November last and discussed the whole question with the proprietors. It was then found that the Company did not want the usual type of a siding by bringing in the mainline of the Railway into the factory ; what is intended is that at the Railway station the goods coming for the Ogale Glass Works instead of being landed on the side of the station away from the factory should be landed on the side of the station which is nearer to the factory. This will mean that a small assisted siding will have to be made on the Railway station on that side of the station which is nearest to the Works. If this is done Messrs. Ogale Glass Works will lay down a light trolley line from the assisted siding of the Railway station to their factory. Their request appears to be reasonable and they are in correspondence with the Railway authorities on the subject. They will write to this Department if necessary in the matter.

13. **Assistance to Departments.**—The Department of Industries rendered assistance to other Departments of Government in the following instances :—

(1) The order placed by the Chief Conservator of Forests with the Bombay Woollen Manufacturing Company for supplying woollen

cloth required for the uniforms of subordinates of the Forest Department for the year 1928-29, a reference to which was made in paragraph 80 of the last Annual Report of this Department, could not be executed by the firm because owing to adverse trade conditions the Company was obliged to close the mill. Consequently, the order was cancelled by that officer. In the year 1929-30 again the Chief Conservator of Forests received tenders from mills for these uniforms. The prices quoted by Indian mills were very high when compared with the prices quoted for non-Indian materials. Efforts were made by this Department to get quotations for Indian materials giving prices somewhat near the prices for non-Indian materials. Unfortunately, the Department was not successful in this and Government were obliged to purchase non-Indian cloth.

(2) The Horticulturist to the Government of Bombay prepared Lime Juice in his laboratory and requested this Department to value it and to report whether the stuff could find market in Bombay. The Lime Juice was tested in the laboratory and the time required for its deterioration was determined. This Department sent samples to principal manufacturers of ærated waters, and leading hotels and restaurants, for trial and opinion. The opinion expressed by these firms was communicated to that officer.

(3) **Jails Department.**—In paragraph 81 of last year's report it was mentioned that work in connection with agency arrangements for the sale in Bombay of products of Jail and Criminal Tribes Settlements was in hand. During the year under review, the necessary arrangements were completed and the Bombay Swadeshi Co-operative Stores were appointed Agents. The Jails Department has given to the Stores cotton textiles of the value of Rs. 2,500 on consignment. I have personally visited the Stores from time to time to ensure that the Jail materials are well arranged to catch the eye of the public. The experiment will be watched with considerable interest.

The Jails Department was also put in touch with the Army & Navy Co-operative Stores in connection with canework, etc. The Stores sent up to Poona two of their representatives to see the Jail products and if possible come to some arrangement.

(4) At the request of the Excise Department, the Department of Industries considered the question of utilisation of spent Mhowra flowers for the manufacture of paper pulp. The Industrial Chemist attached to this Department is of the opinion that spent Mhowra flowers are not suitable for paper making. The Excise Department had been in touch with a paper mill which had agreed to try out the experiment on a commercial scale provided a sufficiently large quantity of spent Mhowra flowers was supplied. To enable the Excise Department to comply with this request at a moderate cost of pressing, etc., a press

was devised and a sketch of same was forwarded to the Excise Department. This press can be made locally at a moderate cost.

(5) The Forest Department wanted to know if refined China clay for textile industry can be prepared from the raw China clay found at Castle Rock in this Presidency. The investigation is being carried on and the results will be ready soon.

STATE-AID TO INDUSTRIES

14. During the year under report, four applications were received for state-aid to industries. Two of these were from firms to whom a loan had been previously refused. There were no new proposals put up to warrant re-consideration. Both applications were, therefore, rejected. The third application was from a firm of manufacturers of fertilisers. The firm first approached the Director of Agriculture for a loan of Rs. 50,000 to develop their business. This loan application was rejected by Government. The same firm again applied to this Department. As the matter had already been considered by Government and as no new points were raised for consideration, the applicant was informed that this Department was unable to make a recommendation to Government in the matter. The fourth application was from a fish merchant who wanted a loan of Rs. 50,000 with a view to develop canning industry. He was requested to submit certain particulars, such as the security he would offer, conditions on which the loan is to be granted and so on, but he has not replied so far.

In addition to this an application was received direct by Government for a loan of Rs. 5 lakhs. The application was referred to this Department for opinion and remarks. The Department submitted its remarks to Government.

ORGANISED INDUSTRIES—INVESTIGATIONS

15. During the year the Department carried out the following investigations in connection with the establishment of new industries or extensions of existing industries.

Chemical Industry.—In 1927 a preliminary inquiry was made in connection with the imports of Chemicals from abroad and their manufacture in India and Government were addressed in the matter. This inquiry was carried further during the year and details were worked out.

In countries like Great Britain, Germany, France, Italy, U.S.A., etc., one finds the following industries listed under the general heading "Chemical Industries" :—

(1) Heavy Chemicals. (2) Fine Chemicals. (3) Chemical fertilisers. (4) Coal tar products. (5) Dyestuffs (coal tar dyes). (6) Explosives and matches. (7) Artificial silk, pyroxiline, etc. (8) Sugars (other than cane and beet sugar), starch, dextrines, etc. (9) Soap, glycerine,

fatty oils, hydrogenated oils, etc. (10) Alcohol and other solvents. (11) Paper and pulp. (12) Paints and varnishes. (13) Wood chemicals and charcoal. (14) Tanning materials and natural dyestuffs. (15) Manufactured gas. (16) Glass.

In 1927-28 over Rs. 21 crores worth of these items were imported into India, Bombay's share being Rs. 9·5 crores, and Karachi's imports being Rs. 1·9 crores. These imports are as under :—

Chemicals	Value	Bombay's imports	Karachi's imports
	Rs.	Rs.	Rs.
Chemicals and chemical preparations ..	2,64,95,010	86,07,837	29,08,307
Drugs and medicines	2,08,66,663	78,17,069	12,46,258
Chemical fertilisers (artificial mineral manures)	42,00,128	4,01,101	17,401
Coal tar products (coal tar and pitch) ..	6,08,225	4,31,654	12,678
Dyestuffs (coal tar dyes)	2,16,28,560	1,65,41,551	6,68,002
Explosives	27,41,850	5,97,355	1,11,675
Artificial silk	1,49,20,738	1,22,12,597	3,40,554
Starch, etc.	35,09,784	26,10,561	13,828
Soaps	1,61,37,248	60,07,353	14,56,622
Alcohol (spirit present in drugs, etc., perfumed spirits, denatured spirit, etc.)	65,29,843	21,64,948	2,56,222
Paper and pulp (Paper paste board and pulp)	3,40,85,875	1,55,76,837	21,23,280
Paints and Varnishes	1,54,78,873	52,08,421	13,07,261
Glass	2,48,40,850	1,03,05,336	15,22,274
Hardened fats (Vegetable products or ghee)	1,92,12,503	67,22,458	69,90,142
	21,12,56,151	9,51,05,078	1,89,74,504

Grouped under " Chemicals and Chemical Preparations " are such very important items as Soda Ash and Sulphuric Acid. On the cheap supply of these two Chemicals many other Chemical Industries depend. It is not an exaggeration to say that there is hardly any industry in which sulphuric acid is not used in one form or other. India is now very largely self-contained in the matter of the supply of sulphuric acid, but the price at which it is available is very high as compared with that prevalent in other countries. Soda ash is imported and its price is also relatively high in India. The fact that prices of these basic materials, that is, alkalis and sulphuric acid, are very high in India, adversely affects the establishment of the majority of other Chemical Industries.

The opinion at present held by some people is that many of the fine chemicals and their products included in the statement above are required in India in such small quantities that it will not be practicable to establish factories for their manufacture in India. The investigation carried out by this Department has revealed that this is not altogether correct. In the Bombay Presidency there are already manufactured some chemicals of this type. A recent example which has come to the notice of this Department is that of Formaldehyde. This chemical is not separately mentioned in the Annual Statements of the Sea-borne Trade of British India. Its use would, accordingly, be considered to be so small that it will not be practicable to manufacture it in India at a competitive price. Actually, however, a factory has recently been established in the Bombay Presidency to manufacture this chemical and its entire output is being purchased by a big European firm of importers of chemicals. Similarly, in connection with certain other chemicals, like soda ash, the common impression is that the conditions of manufacture are not favourable. It is held that raw materials are available at places where there is no demand for finished products and *vice versa*. Therefore, the cost of the finished product which could be made available would be high and it will not be possible to compete with foreign manufacturers. This matter has also been considered at great length and manufacturing costs have been worked out and the Department has come to the conclusion that many of the chemicals now imported can be manufactured in India at competitive prices. The whole subject, however, is a very difficult one and is highly technical and in view of the great importance of the Chemical Industry to the whole of the country and in view of the fact that the entire Chemical Industry of the World is controlled by probably half a dozen gigantic corporations, it is essential that the problem of manufacture of chemicals in India should be very carefully considered on all-India basis by a Committee of Experts. A detailed report has in this connection been submitted to Government and is under their consideration now.

16. **Match Industry.**—At the instance of a match factory the Department considered the question of commercial utilisation of the bark as well as the core of match wood left over after the veneers have been peeled off.

Most of the factories addressed informed the Department that they used these " leftovers " as boiler fuel.

The Chief Conservator of Forests, Poona, the Forest Economist, Forest Research Institute, Dehra Dun, and some firms of machinery makers, etc., were consulted. The Forest Economist suggested that cotton reels and brush backs can be made out of these " leftovers." He also suggested that suitable packing wood wool can be manufactured out of the wastage. Samples of these items were made by him from the " leftovers " supplied by this Department. The information collected was brought to the

notice of the match factories in this Presidency. A Brush Manufacturing concern in Bombay was put in touch with the match factory which made this inquiry with a view to try these cores for making brush backs. The question regarding machinery suitable for making wood wool is at present under the investigation of the Department.

17. **Supply of electrical power for small industries.**—In 1926 Government directed the Electrical Engineer to Government during his visit to Europe that year to go to Switzerland, Norway and Sweden and see the use of hydro-electricity by small industries in those countries and then to examine the question of making electricity available to small industries in the areas through which the transmission lines of Hydro-Electric Companies managed by Messrs. Tata Sons, Ltd., pass. The report of the Electrical Engineer was published in 1927 as P. W. D. Technical Paper No. 18. The Department of Industries considered this matter in detail during the year under review.

The areas, through which the transmission lines of the Hydro-Electric Companies managed by Messrs. Tata Sons Ltd. pass, may for convenience be divided as under :

(*a*) Bombay City.

(*b*) Rural townships for which distribution licenses have already been issued by Government or are likely to be issued shortly.

(*c*) Areas other than the above.

Bombay City.—So far as the City of Bombay is concerned, the Hydro-Electric Companies supply power to large industrial consumers direct. The smaller consumers are supplied power by the Bombay Electric Supply and Tramways Company who themselves buy electric energy in bulk from Messrs. Tatas for distribution in Bombay. Bombay City may be considered to be well-served in the matter of electricity, although opinions differ as to whether the power rates charged cannot be still lower with mutual advantage to the supplying companies and the consumers.

Rural areas.—Salsette, Kalyan, Thana, Lonavla, Khandala and Poona have all now electricity available for supplying to industries. I understand that Messrs. Tatas have arrangements in hand for the supply of bulk power for distribution in Panvel and Bhivandi also. Other townships within easy reach of the Tata transmission lines, the most important of which are Pen and Talegaon, are also, I understand, under investigation by Messrs. Tatas with a view to their coming to some arrangement with persons who may purchase energy in bulk from them and distribute same to the public.

It is important to note that most of the industrial establishments in the areas served by the Tata transmission lines are concentrated in the towns mentioned so far.

The present charges levied by the Tata group of Hydro Companies for supplying energy in bulk in *rural* areas are about 1·25 annas per unit

for the first 13,000 units, and 1 anna per unit for the next 40,000 units and 0·9 annas per unit for the subsequent 40,000 units. Keeping in mind the cost of transmission and distribution, it is doubtful if energy could be sold to small industrial establishments at anything substantially under 2·5 annas a unit. As against this, the cost of power to a small factory which has installed a small power plant, say an oil engine of its own, may be about 1·5 to 1·75 annas per unit. There is considerable room for reduction in cost of energy to small industries before the latter can find it advantageous to utilise it. The matter deserves consideration at the hands of the parties concerned.

Remaining areas.—This still leaves the remaining areas to be considered. It will be noted that in these remaining areas there are hardly any industrial establishments. The cost of making electricity available in such areas where there is no likely demand would be prohibitive.

I understand that each out-door single-phase sub-station for transforming 100,000 volts (the voltage of Tata lines) to 2,200 volts and making available about 100 Horse Power will cost about Rs. 65,000. A similar three-phase out-door station making available about 200 Horse Power will cost about Rs. 1,10,000. For factories three-phase power is advisable. In addition to the cost of sub-stations there would be the very considerable cost of transmission and distribution lines.

If it were considered essential to make power available to small factories in these areas, this purpose would be much more cheaply fulfilled by advancing loans on easy terms for the purchase of small individual power plants than by embarking on the establishment of electrical sub-stations scattered at different points and setting up transmission and distribution lines.

The general conclusion reached was that there is nothing at present which this Department can do in the matter of utilisation of electricity by small industrial establishments.

FISHING INDUSTRY

18. The only grant available under this heading was Rs. 1,000 for Oyster Culture in Sind. This work is in charge of the Collector of Customs, Karachi.

General work was, however, attended to by the Department, some of which is as follows :—

(1) A fish merchant wanted particulars to start a fish canning factory. Such information as was available was supplied to him. He was also given the names of manufacturers of Canning Machinery. He was also advised to pay a visit to the Madras Cannery at Beypore.

(2) The Department considered the question of carrying out a comprehensive survey of the fishing industry of this Presidency including

Sind, and submitted proposals to Government in the matter. Government, however, were pleased to decide that for the time being the survey conducted by Mr. W. H. Lucas, I.C.S., in the years 1908-09 should be brought up-to-date and directed that the Collector of Salt Revenue should carry out the work during the next touring season.

MINES AND MINERALS

19. Government were pleased to re-transfer to this Department from the Department of Agriculture the work in connection with mines and minerals in the year under report. At present the work consists of collecting statistics relating to the mines governed by the Indian Mines Act and mines which do not come under it, and submitting them to Government.

COTTAGE INDUSTRIES

Hand Weaving and Allied Industries

20. **Hand Weaving Industry.**—The Department of Industries continued its propaganda of helping and advancing the Hand Weaving Industry, which is the premier cottage industry of this Presidency, by means of its Weaving Schools and Demonstrations. Similarly, Dyers and Calico Printers as well as Weavers were helped in adopting improved methods in dyeing and calico printing through Dyeing Demonstrations.

In the Annual Report of this Department for 1928-29 it was stated that the report submitted by Mr. S. V. Telang, Senior Weaving Assistant of this Department, together with my recommendations was under the consideration of Government. It may be noted that Government were pleased during the year to approve my recommendations and the following new schemes were sanctioned :—

(*a*) One additional Dyeing Demonstration.

(*b*) Two Weaving Schools and two Weaving Demonstrations for Sind.

(*c*) One Central Hand Weaving Institute.

The operations of the Weaving Section were, therefore, extended to Sind during the year under review by the opening of one Dyeing Demonstration at Tatta, District Karachi, one Weaving School at Hala and one at Nasarpur, and one Weaving Demonstration each at Lahori and Lakhi. The Central Hand Weaving Institute is located at Poona. A separate mention of these institutions has been made in the subsequent paragraphs.

21. **Weaving Schools for bona fide weavers.**—Weaving Schools and Demonstrations were held at different places. These being peripatetic institutions were transferred from one place to another as found necessary. During the year under review the Department had under its control 8 Weaving Schools intended for *bona fide* weavers. These Schools were

conducted at the following places and the number of fly shuttle looms introduced is mentioned against each :—

Division	Place	District	Number of fly shuttle looms introduced
Southern	.. Gajendragad ..	Dharwar ..	47
Central	.. Dharangaon ..	East Khandesh ..	153
"	.. Chandor ..	Nasik ..	36
"	.. Satana ..	Do. ..	15
"	.. Kharda ..	Ahmednagar ..	22
Northern	.. Surat ..	Surat ..	5
"	.. Broach ..	Broach ..	16
Sind	.. Hala ..	Hyderabad ..	11
"	.. Nasarpur ..	Do. ..	..

The School at Chandor having finished its work was removed to Satana in February 1930 and that at Kharda was closed on 31st March 1930 and was transferred to another suitable centre, *viz.*, Bhingar. The School at Dharangaon was equipped with a Hattersley's Loom with a view to demonstrate it. As a result of the demonstration two such looms were introduced. The Broach School was closed on 31st March 1930 and it is now converted into a Weaving School for agriculturists of the Northern Division.

The scheme of Weaving Schools and Demonstrations in Sind was sanctioned in May 1929 and much time had to be spent in preparatory arrangements, *e.g.*, selection of qualified staff and suitable weaving centres, securing suitable premises and purchasing of improved implements, etc. The School at Hala was opened in November 1929 and that at Nasarpur in February 1930. However, during the short period from the date of its regular work the School at Hala introduced 11 fly shuttle looms. The work of organising the Weaving Branch in Sind was taken in hand in October 1929. It was found that practically no hand weavers in Sind were acquainted with fly shuttle looms and that Susi and Khes were the chief varieties of cloth which the local weavers could make. The demand for these varieties of cloth is daily decreasing. It was, therefore, considered necessary not only to introduce the fly shuttle looms but also to teach the weavers new designs and patterns of cloths. I have personally visited both the schools and have met a large number of weavers. In the beginning there was considerable amount of prejudice and fear that the schools had been opened to " steal the local art." I am glad to say that the initial difficulties have been overcome and the weavers are now enthusiastic. I feel confident that the new schools will be successful and I am convinced that they are doing most useful work.

The progress of all the schools on the whole during the year under report was excellent.

22. **Weaving Schools for Agriculturists.**—A Weaving School exclusively for agriculturists was run at Balganur, District Dharwar, during the year under review where it has become a popular institution amongst the cultivating class. The chief aim of this school is to train agriculturists in hand weaving by modern methods and thereby to encourage amongst them hand weaving as a part-time occupation. I paid a visit of inspection to the school in November 1929 and found that the work of the school was quite satisfactory and the agriculturists who came to learn hand weaving as a spare-time occupation were more or less regular in attendance as is the case with the weaving schools for *bona fide* weavers. The school has aroused great interest amongst agriculturists and I found that some of the students who left the school after finishing the full course of six months had set up their own looms in their cottages. The parents of the students and members of the local co-operative society there approached me with a request to continue the school for a further period of one year and promised to send a sufficient number of boys to the school. They further requested me to grant scholarships and prizes to the students as is the practice in the weaving schools for *bona fide* weavers. Government were, therefore, approached in the matter to grant a scholarship of Rs. 3 to each student for the first three months and two prizes of Rs. 2 each per month for the most regular attendance and excellent work in each term of six months. The annual recurring expenditure on this account amounts to Rs. 228 which Government were pleased to sanction. The school trained 14 agriculturists during the year under report and introduced 6 fly shuttle looms.

As stated elsewhere in this report, the Weaving School for *bona fide* weavers at Broach was closed on 31st March 1930 and converted into a weaving school for agriculturists in the Northern Division with a view to try the experiment in that Division. Government have been pleased to sanction scholarships and prizes at the rate mentioned above in this school also. The school was removed to Amleshwar, a village in the Broach District, after March 1930.

23. **Weaving Demonstrations.**—In addition to the abovementioned weaving schools, the Department had under its control 11 Weaving Demonstrations. These are also peripatetic institutions and were held at different places in the Presidency and Sind during the year under report with a view to demonstrate the use of fly shuttle looms and other improved appliances. Each Demonstration is equipped with two fly shuttle looms on one of which the Demonstrator himself works and demonstrates modern methods in hand weaving while on the other he gives practice to weavers attending the Demonstration. The Demonstrations like the schools were transferred from one place to another as found necessary. During the

year under review Demonstrations were held at the following places and they introduced the number of fly shuttle looms mentioned against each :—

Central Division ..	.. Vita (67), Raver (33), Sangola (25), Javla (28).
Southern Division ..	.. Yamkanmardi (5), Chikodi (20), Kolhar (8), Gudur (19), Tumin-katti (56).
Northern Division ..	.. Chikhli (7), Samarkha (12), Alindra (4).
Sind	.. Lahori (—), Lakhi (—).

Demonstrations at Lahori and Lakhi were opened only in February 1930. The Demonstration at Kolhar participated in the Agricultural and Industrial Shows held at Bijapur from 7th to 9th June 1929 under the auspices of the Wilson Anti-Famine Institute, Bijapur. Weaving of coarse cloth and silk saries was demonstrated which aroused considerable interest there.

The Demonstration at Vita took part in the Show organised by the Deccan Agricultural Association, Poona, at Khed Shivapur from 22nd to 24th December 1929 where it created keen interest amongst agriculturists and weavers.

The Demonstrator at Chikhli was deputed to Bordi, District Thana, with modern implements to demonstrate hand weaving art at the Agricultural Show there from 8th to 12th March 1930. The work of the Demonstration was appreciated.

In the Northern Division at weaving centres, like Broach and Chikhli, female weavers showed readiness to learn hand weaving by modern methods on fly shuttle looms. As many of them were Parda women and could not attend the Weaving Schools or come to the Weaving Demonstrations, fly shuttle looms and accessories were loaned to those who applied for same. The weaving staff gave them instructions in their cottages and trained them on the improved implements. As a result of this, 5 female weavers adopted fly shuttle looms.

The progress of the Demonstrations mentioned above was on the whole very good.

24. **Demonstration of improved preparatory appliances and Automatic Handlooms.**—The Warping and Sizing Demonstration of the Department continued to work at Sholapur satisfactorily. It was closed from January 1930 in view of the Central Hand Weaving Institute having been sanctioned and opened in Poona. This Demonstration as usual gave all possible help and advice to local weavers and handloom factory owners in manufacturing, setting up and working of the machines designed by this Department. It also demonstrated the working of the Geo. Hattersley's looms, one of which was removed to Dharangaon

Weaving School with a view to demonstrate it there as stated in a foregoing paragraph. The Demonstration during its work at Sholapur till the end of December 1929 introduced 10 warp winding machines, 3 large hand sizing machines and 39 Universal dobbies.

25. **Cottage Sizing Set Demonstration.**—One Cottage Warping and Sizing Set Demonstration was held at Pathardi, Poona and Parola during the year under report. This is a small hand sizing machine worth about Rs. 75 designed by this Department. It is made partly of wood and partly of iron and does not require any separate warping arrangements. It occupies a space measuring 16′ × 16′ and is suitable for an individual weaver who owns 2 to 4 handlooms. The Demonstration introduced 1 machine at Pathardi and 1 at Ahmednagar. At Pathardi, the Weaving Staff in addition to their duties of the Demonstration gave free training on fly shuttle looms and the machine to the inmates of the Shree Ahilyadevi Ashram and the Anath Muslim Vidyarthi Griha at their request. As a result of this, 4 looms were introduced and 10 more were got locally purchased or manufactured by those interested in hand weaving. From Pathardi the Demonstration was removed to the Swadeshi Bazar and Industrial Exhibition, Poona, where it aroused considerable interest. About 29 men attended to get training and instructions regarding the working of the machine. As a result of the demonstration 2 such sets were locally manufactured at Poona for Messrs. Dattu R. Koohti and D. G. Deshpande of Aundh State. The Demonstration was then removed to Parola where it aroused great interest amongst weavers and was visited by about 200 persons. The members of the Weavers' Society at Parola who were doubtful of the utility of the machine in the beginning ultimately got one set of 1½ times more capacity locally manufactured for their requirements.

The Demonstration thus introduced 5 cottage sizing sets during the year under report. Its work was quite satisfactory and it continues to be popular amongst weavers.

In addition to the above, 4 Weaving Schools of this Department were equipped during the year under report with one cottage sizing set each with a view to demonstrate it amongst weavers of the places where the schools were held and to train the students attending the school in improved methods of hand sizing. The set was supplied to the schools at the following places :—

Dharangaon, Gajendragad, Broach and Balganur.

Reports about the working of these sets and their practical utility to the weavers have been received and are under consideration. If it is found by experience that weavers are really benefitting by the schools being equipped with a sizing set, a recommendation will be made in due course to Government that each of the other schools may also be supplied a set.

26. **Wool Weaving Demonstration.**—This Demonstration started its regular work in August 1929 at Hukeri, district Belgaum. It was equipped with 3 looms to meet the local demand. In the beginning the prejudices and conservatism of the wool weavers were a hindrance in the progress of the Demonstration but they were soon overcome through the pursuasive methods of the Weaving Staff in charge of the institution. Eight wool weavers between the ages of 13 to 25 gradually began to attend the Demonstration regularly for some hours a day and they were given all theoretical instructions and practice on the improved fly shuttle looms and allied appliances. The Demonstration did slowly but steadily arouse interest. During my visit to the Demonstration in November 1929 one of the wool weavers who was trained in working on the fly shuttle loom informed me that he took one day to weave two Kamblis by using modern methods and improved implements against the period of one and a half day for the same production on the old type loom. A meeting of wool weavers was held and they confirmed this statement in my presence. The wool weavers appeared to have been satisfied with the Demonstration.

The Demonstration is doing very useful work and has so far aroused considerable interest amongst the wool weavers of the place who send their boys to the Demonstration regularly to get training and practice.

Out of 8 weavers attending the Demonstration for some hours daily, six have already set up improved fly shuttle looms and it is expected that more looms will be introduced in the near future.

27. **Introduction of Beam System in Hand Weaving.**—This formed an important feature in the work of the Weaving Section during the year. Sized warps of single yarn prepared by the weavers in C. D. range between 9 to 60 yards in length and they are hand made. Warps of twisted or double yarn, however, extend to the length of 150 yards.

The weaver requires a space of about 8′×16′ to work on a handloom in his cottage by stretching the warps. He has to leave his seat from time to time to release warps after some length is woven. To produce 60 yards of cloth three separate warps of 20 yards each are prepared. The weaver is required to piece them thrice and to spread them and stretch them six times over. Hence by cutting three times, warps of about 2 yards in length are wasted. The adjustment of the loom all these three times in the above method takes away three half days at least. This disadvantageous old system is carried on in almost all the weaving centres.

With a view to save labour and to effect reduction in cost of sized warps as well as to facilitate the handling of the fly shuttle loom conveniently—as the loom is capable of turning out larger quantities of cloth—experiments were undertaken by using wooden beams affixed to looms at Dharangaon Weaving School to begin with.

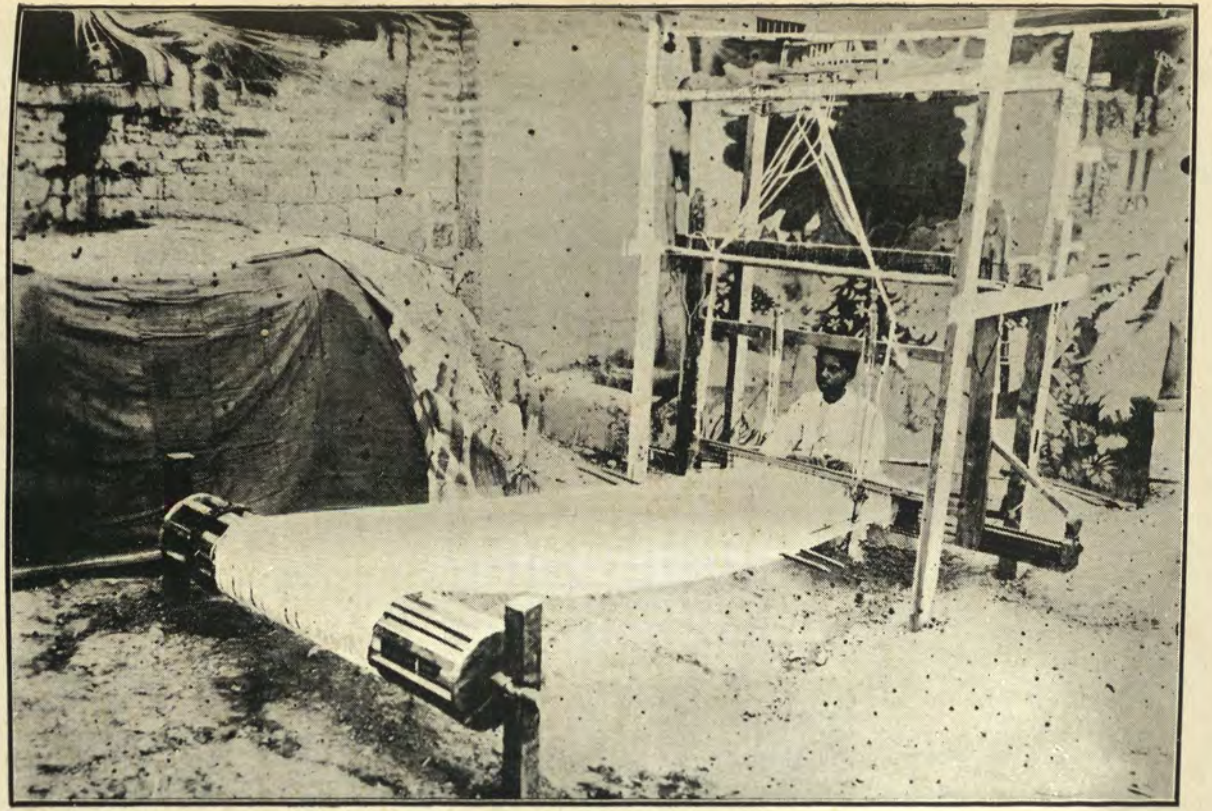
The Beam is a simple contrivance of wood resembling a drum in shape. It consists of 3 wooden flanges, each one inch thick and 12 inches in diameter fixed one at each end and one in the middle of a square wooden rod 2" × 2" and 54" in length. Eight wood battens of 2" in breadth each are fixed to the flanges at a distance of 2 inches from one another. It is manufactured and supplied by local carpenters of Dharangaon for about Rs. 4-8-0 only.

The long sized warp of 60 yards prepared by the weaver is stretched on a road or in a street and wound on the wooden beam evenly and tightly by hand. This takes about 20 to 30 minutes at the most. The beam is then adjusted to the loom opposite the weaver so that the method of stretching sized warps at considerable length and fixing them to a peg in the ground is obviated. The loom is thus conveniently accommodated with the beamed warp in a space of about 8'×8', the losses and delays experienced by the weaver in using stretched warps are thus automatically avoided and he is a gainer by adopting beam system in his work. The importance and benefit of the beam system were explained to the weavers of Dharangaon and Raver by assembling them in frequent meetings. As a result of this demonstration, so far 64 beams at Dharangaon and 7 beams at Raver have been introduced during the year under report. The system is being popularised in the other centres also. Two photographs illustrating the loom with and without a beam are attached for information.

28. **Dyeing Demonstrations.**—One Dyeing Demonstration worked during the year at Bhingar, Poona and Hubli.

(1) The weavers at Bhingar as elsewhere depend upon dyers for having their yarn dyed and so arrangements were made to help the local weavers' co-operative Society in opening a small dye-house for their requirements. The Society made the necessary purchases for the equipment of a modern dye-house and in this connection all possible assistance and advice were given. The dye-house was put in regular working order in May 1929. The members as well as non-members were trained in the most up-to-date methods of hand-dyeing and the Demonstration as a result proved an institution of considerable advantage to local weavers and cottage dyers at Bhingar.

The useful work and importance of the Demonstration at Bhingar came to the notice of some persons interested in dyeing industry at Ahmednagar. About 5 dyers and merchants attended the Demonstration at Bhingar from Ahmednagar. Their difficulties in securing exact and fast shades were solved and instructions in modern methods were given to them. They started their work in their cottages slowly and being satisfied with the new processes, ordered out necessary colours and chemicals from Bombay and Sholapur as advised by the Demonstrator from time to time. Their work during training was supervised



WEAVING ON FLY-SHUTTLE LOOM WITH BEAM SYSTEM.

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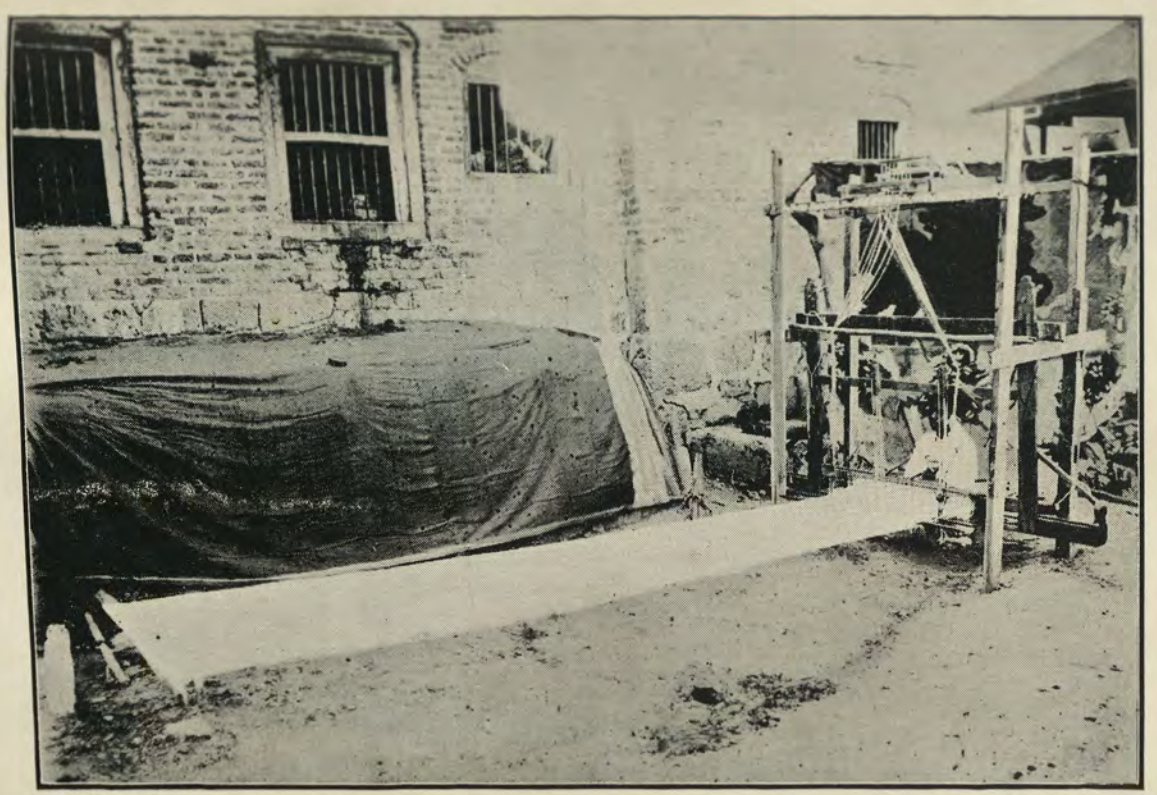


WEAVING ON FLY-SHUTTLE LOOM WITHOUT BEAM SYSTEM.

[*To face page 24*

by the Demonstrator and when they began to successfully work on their own at their places they could procure work from the local yarn merchants and weavers.

(2) The Demonstration was then removed to the Swadeshi Bazar and Industrial Exhibition, Poona, in September 1929.

About 31 persons attended the Demonstration at the Show and received complete instructions in the improved methods of cotton and silk dyeing. These persons came from various places like Yeola, Bhingar, Ahmednagar, Wai, Satara, Indapur, Saswad, Javla and Ranibennur on reading the advertisement about the Demonstration being held at the Show and remained at Poona according to their convenience and learnt the art with considerable enthusiasm.

(3) The Demonstration was then transferred to Hubli, District Dharwar, in November 1929. There are 2 Weavers' Co-operative Societies here and some 3,512 looms are working, the chief articles of manufacture being bodice cloth, saris, scarves, etc., from silk, spun silk, artificial silk and mercerised yarn. Raw and dyed silk yarns are purchased from Bangalore, Sholapur and Bombay. Dyed and grey cotton yarns are imported from Bangalore, Madras, Gokak, Ranibennur, Rabkavi, Sholapur, Sangli and Bombay.

Majority of the members of the Weavers' Societies desired to learn first silk dyeing by improved methods as they had to purchase dyed yarn at high rates from other cities. All the shades required by the weavers were tried out and full instructions were imparted to both the members and non-members of the Societies. The weavers were satisfied with the exactness and fastness of the shades required as the samples dyed in the Demonstration proved to be in no way inferior in tone, lustre, feel and fastness when compared with the dyed yarns bought from Bangalore, Bangalkot and Sholapur, etc. Forty persons were thus trained in silk dyeing in the first instance. They then started to work on their own in their cottages, their work being occasionally supervised by the Dyeing Demonstrator. The S. D. Co-operative Union then undertook to supply colours, chemicals, etc., to the local weavers at cheap rates by indenting same in bulk packings.

When silk dyeing was successfully learnt the Managing Board of the Weavers' Society decided to open a Dye-house for dyeing cotton as cotton yarn dyed red, black, yellow, and crimson, is required at Hubli in large quantities. Estimate of expenditure for a dye-house was given by the Demonstrator with all possible technical advice and details and the S. D. Co-operative Union opened a Dye-house for cotton dyeing. The Dye-house is expected to be in complete working order shortly.

On learning about the work of the Demonstration at Hubli, two persons from Dharwar Co-operative Society came to learn improved methods.

They used to purchase dyed yarns from Rabkavi, Banahatti and Sangli. They were given necessary training and instructions. On return to Dharwar they opened a Dye-house on a small scale through the local Weavers' Co-operative Society. A moderate beginning has been made by them in providing dyed yarns to local weavers.

Two persons from Kittur also came to learn modern methods in dyeing. They are still receiving instructions and practice in the Demonstration. Several persons from Gadag, Guledgud and other local weavers and dyers attended the Demonstration, all of whom were given necessary advice and instructions. More than 80 persons got training in the Demonstration and the Weavers' Societies at Bhingar, Hubli and Dharwar opened small Dye-houses for their requirements. Enquiries requesting recipes for Dyeing and Bleaching of silk, etc., were received and attended to.

The Demonstration proved successful at the places at which it was held and continues to be popular amongst weavers and dyers.

29. Government were pleased to sanction in 1929 one additional Dyeing Demonstration.

A suitable Demonstrator was appointed in July 1929 who was first given training in the nature of the propaganda work assigned to his post at Bhingar under Mr. D. V. Datar, Senior Dyeing Demonstrator of this Department. He was thereafter sent to Sind to study the Dyeing Industry there and to find a suitable centre to begin with. He visited Hyderabad, Tando Allahyar, Nasarpur, Hala, Tatta, Lakhi and Shikarpur. At first Hala was selected but owing to the flood situation then prevalent at the place, Tatta was taken up as the next suitable centre. The majority of dyers at this place were found dyeing only Indigo, and the Calico-printers worked mainly with Aniline Black and Catachu. Besides these, some weavers dyed yarns for their own use with some direct basic dyes. Nearly all kinds of dyed yarns were being imported from places like Petlad and Bombay as the local dyeing failed in fastness and exactness in shades. Visits were paid to the small dye houses and dyers' cottages with a view to study their processes and find out defects. Several of them used chemicals and colours without proportions and calculations and did not know of modern dyestuffs and their effects. It was observed after testing the work of some printers that they failed in their work because of the defective water available at certain places. The water was tested in their presence and it was found that it contained considerable amount of iron detrimental to the Alizarine Printing.

Modern dyestuffs, chemicals, apparatuses, etc., were sent to Tatta where the Demonstration was started in regular working order from November 1929. Weavers and local Dyers interested in the art attended the Demonstration with enthusiasm to learn the modern methods although their prejudice and groundless fear that the Demonstration was there to " steal their art " made their attendance at the Demonstration at first

poor. A meeting was held in December 1929 under the Presidency of Mr. Peer Mohmed Jaishini commanding influence amongst weavers and dyers. The chief aims and objects of the Demonstration were explained to the weavers and dyers who attended the meeting and the old prejudices and doubts were removed. The attendance then became regular and instructions in dyeing and bleaching were imparted to the weavers and dyers attending the institution.

Samples were experimented upon and matched to shades. People took great interest in Naphthol and Sulphur Dyeing on cotton and only Sulphur Dyeing on silk. Other colour dyeings were also demonstrated in which the dyers took keen interest and experiments in multi-colour printing were made. This work was quite new to many of them. After getting sufficient training and practice in the Demonstration six persons started on small basis their dye-houses with improved methods under the supervision and guidance of the Demonstrator. About 6 individual dyers and printers started to work on their own with improved methods in their cottages, one of them having begun aerograph and multi-colour printing.

Several persons from Karachi, Sujawal, Jati, Peer Patha and Jhimpeer attended the Demonstration with inquiries regarding certain shades or particular kind of printing and they were given instructions and training and their difficulties were solved.

In March 1930, I paid a visit of inspection to the Demonstration. I met a large number of weavers and dyers who spoke enthusiastically about the work and usefulness of the institution. They requested me to extend the period of the Demonstration at Tatta for 5 to 6 months more and desired to learn fast colour printing for which needful is being done.

The Demonstration, thus, in the short period of its work at Tatta aroused considerable interest amongst the local weavers, dyers and calico-printers.

ART-WARE—COTTAGE INDUSTRIES

30. The most important art-crafts of this Presidency are :—

Carpet weaving, calico printing, artistic hand-woven silk, artistic cotton hand weaving, manufacture of gold and silver thread, lace work, silk and gold thread weaving, embroidery, kinkhabs, fine wool weaving, lacquer work, pottery, jewellery, wood carving, stone work, glass work, brass and copper metal work, etc.

Artisans are spread all over the Presidency. The chief centres of work, however, are :

Bombay, Ahmedabad, Surat, Broach, Poona, Nasik, Yeola, Gokak, Sawantwadi, Honavar, Kumpta, Hyderabad, Tatta, Hala, Bubak, Kashmore, Khanot and Shikarpur.

The economic condition of the artisans engaged in these industries cannot at all be considered satisfactory. I have considered this matter most carefully and have come to the conclusion that assistance may be usefully rendered to these industries in the following directions :

(*a*) Art-ware industries should be enabled to have access to wider markets than at present.

(*b*) Facilities may be provided for the art-ware industries to be organised on the basis of small factories.

(*c*) The artisans should be given opportunities to learn to produce art-wares which will meet the present changed requirements.

(*d*) Some financial accommodation on easy terms may be arranged.

Proposals have been submitted to Government for their consideration.

31. The Director General of Commercial Intelligence and Statistics, Calcutta, brought to the attention of this Department the fact that when the New India House in London was ready, exhibits showing what Indian craftsmen can do will be welcomed. I considered the matter carefully and after consultation with the Director, Sir J. J. School of Art, it was decided to recommend to Government to permit the manufacture of certain articles in the Reay Art Workshops for exhibition in the India House. Photographs of a large number of articles were sent to the High Commissioner's Office for selection and after a reply was received Government were approached in the matter. The following 28 articles are now being made in the Reay Art Workshops and when ready they will be despatched on loan to the High Commissioner for exhibition in the India House as examples of Bombay work :—

Copper Panel, Brass wire Electric lamp shade, Electric table lamp (Brass), Teakwood writing cabinet, Copper tray 10" dia., Copper tray 6" dia., Copper bowl 6" dia., Copper bowl 12" dia., Copper bowl 9" dia., Copper bowl 6" dia., Copper tray 18" dia., Brass wire hanging lantern, Brass embossed plate, Teakwood cigar and cigarette box, Teakwood handle, silver fittings, Teakwood shelf, two Teakwood pedestals 48" high, Brass table top embossed, Copper fire hood, Teakwood tea poy, Silver embossed tray, Silver dip lamp (samai), Silver rose water sprinkler, Silver Uttardani, Silver Panch culla, Carved teakwood music cabinet, Carved blackwood telephone cabinet, Carved teakwood palm stand.

While it is not expected that the exhibition of the articles will immediately result in orders being placed with the Bombay art-crafts workers, it is hoped that it will ultimately be of considerable help in the building up of a foreign trade in Bombay art-wares.

The question of helping the cottage workers in connection with sales here and abroad is under consideration now.

COTTAGE INDUSTRIES—INVESTIGATIONS

HAND-WEAVING

32. The import duty of 5 per cent. ad valorem on yarn was altered in 1927 to 5 per cent. ad valorem or 1½ annas per lb. whichever was higher. For the coarse and medium counts used by the handloom weavers this meant an increase in the duty up to about 12 per cent. ad valorem, the exact percentage depending on the counts of yarn used. At the request of Government an inquiry was made to see the effect of this increase in duty on handloom weavers. Investigations were carried out at the following places :—

Northern Division	.. Broach, Surat and Chikhli.
Central Division	.. Sholapur, Parola, Dharangaon, Chandor and Kharda.
Southern Division	.. Hubli, Gajendragad and Belgaum.
Sind	.. Hala and Tatta.

It was found that wages of weavers had gone down practically everywhere.

In centres like Belgaum, Gajendragad, Hubli and Tatta, where cloths are produced which do not come in competition with mill-produced cloths, while there has been in many cases a slight fall in the prices of cloths, the wages of weavers have remained practically unaltered. This applies to Surat also in the case of Muga Saris and similar other cloths usually not made by mills.

In Sholapur, where hand-weaving industry is organised on factory basis, although there is mill-competition, yet because of the fairly good organisation of the handloom industry which has secured to it good selling facilities, the prices of hand-made cloth have not declined to the same extent as in the centres mentioned below. Here the wages have also gone down, the reduction being from about 5 to 10 per cent. It may be noted that the wages dropped in 1928 and again in 1929. There can be little doubt that this is largely due to the mill competition and trade slump. The former has, no doubt, been made keener by the advantages enjoyed by mills in the form of increased duty on yarn.

In centres like Dharangaon, Parola, Kharda and Chikhli, weavers are suffering badly from the effect of mills coming in direct competition with them by sending to these centres mill-made saris for sale. In these towns the handloom industry is not organised and the marketing facilities are poor. And on the top of it all there was during the year trade depression. The prices of hand-made cloths have, therefore, in many cases gone down considerably. And the wages of the weavers have gone down by something like 40 per cent. below what they were in 1927. Here also the wages came down in 1928 and again in 1929. This is largely due to the mills making and selling in these areas same type of saris and general trade depression.

The bulk of weavers use 20's and 40's counts of yarns which are both imported and made in the country and their prices are affected by the increased duty. But calculations made have shown that so far as the wages of weavers are concerned, if the duty on yarn is made 5 per cent. ad valorem again and the prices of yarn fall to the full extent of the difference and the entire resulting benefit is passed on to the weavers in wages, it is likely to be small, say about one anna two pies per day for cloths made out of yarn of 20's counts and about 8 pies per day for cloths made from 32's counts of yarn. For finer counts, the benefit will be increasingly small.

Actually the weaver's wages per sari of 8 yards of 20's counts in the case of Parola went down from Re. 1-12-0 in 1927 to Re. 1 at the end of 1929; in the same period in the case of Dharangaon, for 32's counts they went down from Re. 1 to Re. 0-10-0 and in the case of Kharda for 20's counts they went down from Re. 1-8-0 in 1927 to Re. 0-10-0 at the end of 1929.

In Broach and Chikhli saris are 5 yards in length and the yarns used are 20's and 32's counts. The wages per sari in Broach went down in the former case from 14 annas to 6 annas and in the latter case from Re. 1-2-0 to Re. 0-13-0 in the years 1927 and 1929 respectively. In Chikhli in the same period wages per sari of 20's counts went down from Re. 0-11-4 to Re. 0-6-8 and for 32's counts from Re. 1-5-4 to Re. 0-13-4.

The weaver takes on the average 1½ days per sari of 8 yards of 20's counts and 32's counts, and 1 day per sari of 5 yards of 20's counts and 32's counts. These figures relate to work on fly shuttle looms.

33. The importance of the handloom industry in the national economy may be gauged from the following figures of production of cloth on handlooms.

Years	Million Yards
1896-97	784
1905-06	1,084
1914-15	1,184
1924-25	1,256
1927-28	1,291

In 1927-28 the production on handlooms was about 26 per cent. of the total cloth consumed in India.

It will be noted that the production on handlooms has steadily increased.

As regards Bombay Presidency, accurate figures are not available. But it is estimated that there are no less than about 800,000 people belonging to both the Hindu and Muhammadan communities in this Presidency who depend wholly or largely on handloom weaving and *allied* industries for subsistence. There are about 990 places in the Presidency where hand-weaving and allied industries are carried on and the number of

looms at each place ranges from 2 to 5,000. The number of handlooms at work in the Presidency including Sind is put down to be approximately between 80,000 and 100,000.

34. The investigation referred to in paragraph 32 has shown that bulk of the hand-weavers are in a very poor economic condition and that help is urgently required to be rendered in the following directions :—

(*a*) Helping weavers in each handloom centre to organise themselves for (1) Co-operative finance, (2) Collective purchase of raw materials, (3) Collective sale of finished products.

(*b*) Training of suitable men who may organise the handloom industry on factory basis.

(*c*) Introduction of improved appliances.

(*d*) Assisting the handloom weavers to weave cloths which do not come in direct competition with mills. Helping weavers to standardise their production in connection with width, length, design, quality, etc.

(*e*) Helping the people concerned to organise in each of the large handloom centres one or more small factories for sizing the yarn and supplying same in warps to weavers and for calendering and finishing cloths produced on handlooms.

(*f*) Helping weavers to find markets for their finished products beyond the restricted areas to which they now have access.

So far as work under heading (*a*) is concerned, it appertains to the Co-operative Department. There were in the year 1929, 55 Weavers' Co-operative Societies in the Presidency. Most of these Societies were of co-operative credit type. Very little collective purchase of raw materials and sale of finished products is done by the Weavers' Societies. The total membership of the Societies in 1929 amounted to only 2,539 and the working capital amounted to Rs. 2,63,722. From these figures it is obvious that there is a great need for intensive propaganda amongst weavers for organisation of further Societies amongst them for finance, collective purchase and collective sale.

During the year under review, as mentioned elsewhere, a Central Hand Weaving Institute was organised by this Department in Poona. It is hoped that one of the results will be that the past students of the Institute will help the industry to be organised on factory or commercial basis.

This Department has done considerable amount of work in connection with introduction of improved appliances. For this purpose there were maintained during the year, as mentioned elsewhere in this Report, 8 Weaving Schools and 11 Demonstrations for *bona fide* cotton cloth weavers. There were also maintained two sizing demonstrations. The chief purpose of these institutions has been to introduce fly shuttle looms, of which some 14,300 have been introduced during the past 16 years. A number of hand sizing machines, winding machines and beams, etc., have also been introduced. There is, however, yet considerable scope for work in this direction.

It has not so far been possible to undertake work systematically in the other directions mentioned under headings (*d*), (*e*) and (*f*) above. A stage of development has been reached when this work must be done. Considerable amount of money can be usefully spent for this purpose and if it can be made available, then the first step which must be taken is to appoint a Textile Expert who must devote his whole time to hand-weavers' welfare and organise work on the lines suggested above.

MATCH INDUSTRY

35. Government requested the Department of Industries to consider the question of developing Match Manufacture as a Cottage Industry. The term "Cottage Industry" was construed by this Department to cover (*a*) individual cottage workers working in their homes, (*b*) very small concerns equipped with hand-driven machines worked by family members as a family concern or by employees for a master.

As regards individual cottage workers, there are in this Presidency no people who carry out in their homes all the processes necessary for match making in the same way as, say, weavers do in the hand weaving industry. Round about some of the big factories, however, specially those in the suburbs of Bombay, there are a number of workers who make boxes in their own homes. This is the only process in the manufacture of matches which can be carried out in the homes of the workers, provided the necessary veneers and paper, etc., are supplied to them from a factory. These workers are in effect, however, employees of the respective match factories. They get the necessary veneers and papers from the factories whose employees they are and they take these to their cottages, convert the materials into inside and outside boxes and take them back to the factory in question and get paid on piecework basis.

Near Bombay there are three match factories situated between Santa Cruz and Ghodbunder and five between Kurla and Thana. Two of these are fully equipped with automatic box making machines. They only give rejected veneers to outside workers. Two partly make their boxes on automatic machinery and partly get them made by outside agency by hand. Four factories, however, depend entirely on hand-work done in the homes of the workers. All, of course, give the necessary veneers and papers, etc., to the workers and pay them on piecework basis.

These eight factories between them give out box making work to some 2,800 families. A family may be said to consist of 3 workers on the average. Payment varies from 9 annas 6 pies to 14 annas per 1,000 complete boxes. Although a skilled adult working the whole day is able to turn out about 1,000 boxes daily, the average per worker in a family is reported to come to about 600 complete boxes daily.

As mentioned before, these people can only get work round about a match factory. Most of the factories are situated in urban areas where habitations of workers are generally unhealthy. It will, therefore, be

on the whole better for the workers' health if they worked in factories in relatively good atmosphere and under good working conditions brought about by the beneficent acts like the Factory Act, etc. Further, the nature of the work is such that if carried on in cottages, no restriction can be placed on the worker as to the number of hours nor on age or sex of the worker. As the cottage worker is paid on piecework he is likely to overwork and has to accept the wage scale of the factory-owner. So, there is always a possibility of sweating. Taking into consideration all these circumstances, it is not desirable keeping in view the welfare of the workers to encourage box making and labelling to be carried on as a Cottage Industry.

Enquiries showed that in this Presidency there are at present no small match making concerns equipped with hand machines. There was one at Bubak, but it was closed down as it could not meet the competition of the big factories of which there are at present 16 in this Presidency.

Experience of some other Provincial Departments of Industries has shown that match manufacture on small hand-driven factory basis cannot be successful. In Bengal there were some 4 or 5 years back over 30 such factories, but they have now ceased to exist. Matches are now mass-produced in India in big factories equipped with automatic machines. There are no special features, such as for instance exist in the handloom weaving industry, and it is, therefore, most unlikely that small hand-driven factories can be successfully established.

My enquiries have further revealed the fact that in Sweden, Germany and Japan, etc., also owing to the establishment of large factories equipped with automatic match making machinery, match making as a cottage industry has ceased to exist.

Conditions in the Bombay Presidency are now more or less the same as elsewhere. There are at present in this Presidency some 16 match factories equipped with modern machinery. The imports of matches are rapidly decreasing being replaced by matches made in the local factories. The following table shows the net imports of matches into this Presidency during the last four years :—

Year.	1925-26.	1926-27.	1927-28.	1928-29.
Value in lakhs of rupees	..32·63	23·6	13·05	4·12

There is now keen competition between the various Indian factories and it is most unlikely that match making on cottage basis or on a small factory (equipped with hand machines) basis can be a commercial proposition.

All these observations indicate that match making is not a fit industry for development on cottage lines. This conclusion is in agreement with the findings of the Indian Tariff Board.

I am, therefore, of the opinion that this Department shou'd not give any encouragement to match making on a cottage industry basis. On

the other hand, it should definitely encourage and where possible help the establishment of match making factories equipped with the latest automatic machines and organised as economic units.

36. **Hand-made Paper Industry at Junnar.**—Hand-made paper industry was considered by this Department in 1921. It was re-considered during the year under review. The chief centre for this industry at present is Junnar. The Director of Industries personally visited the place in May 1929.

There are altogether 7 small hand-made paper factories in Junnar, each employing about 6 men and 4 women. The total value of the paper made in these 7 small factories is approximately Rs. 12,000 per annum. The paper is made entirely from ordinary old used paper, which is bought by the artisans from the Salvation Army. Only one quality of paper is made.

Wages earned are approximately as follows :—

(*a*) Pulp-makers, *i.e.*, artisans who beat the old used paper and turn it into pulp—Annas 8 to 12 per day.

(*b*) Paper-makers, *i.e.*, men who make paper out of the pulp mentioned before—Annas 12 to Re. 1 according to the number of sheets made per day.

(*c*) Women for glazing the paper—Annas 4 to 6 per day.

The paper is sold at the rate of Re. 1-2-0 per 24 sheets and is used almost exclusively by Indian tradesmen especially Marwaris and Bohras, for their account books.

When the industry was investigated in 1921, the conclusion reached was that it was not practicable to revive it. I agree with this conclusion. While, therefore, it is not possible to organise this industry so that it may flourish and expand, the Department tried to find out means to assist it so that it may continue to exist so long as the special demand for this type of paper is available. In this connection the Department addressed the President of the Taluka Local Board, Junnar, who is interested in the welfare of the paper-makers, to organise these workers so that the Department may help them in getting waste paper free from Government offices in Poona. The President approached the Registrar, Co-operative Societies, for the formation of a Co-operative Society, but as the number of shops is very small, the Registrar could not register the Society. In view of this the President, Taluka Local Board, Junnar, was requested to suggest any other scheme whereby the paper manufacturers at Junnar could organise themselves into a body with a view to arrange collection of waste paper—their raw material from Government offices in Poona in case Government are pleased to give them such paper free of charge ; but so far the President has not been able to do anything in the matter.

In order to increase the sale of their paper, the Department sent samples to the Superintendent, Government Printing and Stationery, Bombay,

with a view to find out whether these papers could be used for any Government work. That officer reported that the paper could only be used for envelopes, but the prices quoted for hand-made paper were so high that the proposal to purchase it could not be entertained.

It is regretted that for the reasons given above it has not so far been possible to help the paper-makers of Junnar.

SPARE-TIME OCCUPATIONS FOR AGRICULTURISTS

37. The following are considered to be spare-time occupations for agriculturists by the Department of Industries.

Hand spinning of cotton and wool for women, hand weaving of cotton and wool, knitting, dyeing, rope making, carpentry, wood turning, smithy, making cooking utensils, soap making, preparing paper pulp for toys, masonry, chunam burning, brick and tile making, preparing toys of wood and clay, etc.

So far the Department has been able to take in hand handloom weaving as a spare-time occupation. Two schools have been opened in purely agricultural villages to teach agriculturists hand weaving. The activities of the schools and the results achieved so far have been described in paragraph 22.

TECHNICAL AND INDUSTRIAL EDUCATION

38. The Department at present controls the following activities under this heading :—

(1) Award of technical scholarships tenable in India. As regards Technical Scholarships tenable out of India, Government were pleased to direct during the year under review that the Director of Public Instruction should continue to be the principal officer for submitting the recommendations for the selection of candidates for the award of State Technical Scholarships but that he should act in consultation with the Director of Industries.

(2) Control of peripatetic Weaving and Sizing Demonstrations described in the previous paragraphs.

(3) Control of the newly organised Central Hand Weaving Institute at Poona.

(4) The Director of Industries was appointed during the year a member of the Committee of Direction for Technical Education, which inspects and assesses for grant the various Industrial Schools in the Presidency and makes its recommendations for same to the Director of Public Instruction. This Committee is not concerned with the Victoria Jubilee Technical Institute. The Director was, therefore, not in touch with that Institute, during the year under report.

SCHOLARSHIPS

39. **Scholarships tenable abroad.**—The rules regarding the award of scholarships tenable abroad are still under the consideration of Government. However, a special scholarship was awarded to Mr. R. N. Bankapur for the study of textile manufacture in the College of Technology, Manchester. The scholar left India in time to join the College in the beginning of October 1929.

One of the scholars who was given a special scholarship in Electrical Engineering in 1926, returned to India in 1929 after completing the training. The other scholar obtained further permission to stay in England for a further period of two years to enable him to carry out research in the Laboratory of the International Standard Electrical Corporation, Hendon.

SCHOLARSHIPS TENABLE IN INDIA

40. **Technical Chemistry.**—Three new scholarships for research work in Chemistry tenable in India were awarded during the year. Out of these, two scholars joined the Royal Institute of Science, Bombay, and one the Indian Institute of Science, Bangalore. The three scholarships granted in 1928 were extended for another year. The scholarship of one scholar granted in 1927 was further extended for the third year as a special case.

41. **Work of scholars at the Indian Institute of Science, Bangalore.**—One of the scholars at the Indian Institute of Science carried on investigations on the absorption of toluene-acetic acid solutions by silica, animal charcoal and sugar charcoal and determined the relative absorption power of these substances. He also worked out a method for the determination of gelatin or glue. The method is found to be suitable for the determination of these substances in dilute liquors obtained during the process of manufacture of gelatin.

Another scholar conducted experiments on the Oerlikon Electrolytic Cells for the generation of Hydrogen and Oxygen. He also did research on the manufacture of sulphuric acid by contact process by means of a cheap catalyst.

Another scholar carried out research on—

(1) Colour of Complex Diazoles.

(2) Synthesis of some sulphur dyes.

(3) Constitution of "Alkanin"—the red colouring matter from the roots of Alkanet.

He has been conducting these experiments for the last three years.

Another scholar carried out investigations on Carbohydrate changes during the ripening of the banana and chemical and enzymical changes during the germination of ground-nut.

42. **Work of the scholars at the Royal Institute of Science, Bombay.**—One of the scholars at the Royal Institute of Science was working on the condensation of Chloral with succinic acid.

Another scholar was making research on the determination of absorption coefficients of the acidic mixtures and alkaline mixtures.

Another scholar was making research on the condensation of phenols and phenolic ethers with acetone Dicarboxylic acid.

43. **Electrical Engineering.**—Two new scholarships in Electrical Engineering for practical training in Electrical Engineering were awarded during the year. One of the scholars, having been ill after nomination, had to relinquish his scholarship. In his place a suitable candidate recommended by the Selection Committee was taken. The scholarships of the students granted in 1928 terminated in June 1929.

INDUSTRIAL EDUCATION

44. The Department of Industries controls the various peripatetic institutions described in the previous paragraphs with the object of imparting industrial education in handloom weaving and dyeing and calico printing. In addition to these, the Department has recently organised a Central Hand Weaving Institute at Poona with the following objects in view :—

(1) To give theoretical and practical training in the Technology of handloom weaving which would qualify students to take charge of weaving schools as superintendents and instructors and to work in factories on business lines as managers and maistries.

(2) To provide instruction in improved methods of handloom weaving, including preparation, finishing, designing and dyeing, in order to enable students to work profitably as weavers in their cottages or in factories.

(3) To undertake experimental and research work in connection with handloom weaving appliances and processes.

(4) To make available information about the latest and most up-to-date appliances in handloom weaving.

(5) To make available new designs for handloom weaving.

(6) To give technical advice to handloom weavers and handloom factory-owners.

The Institute has two courses of training, namely, Advanced Course and Artisan Course. The former is of two years' duration and boys who have studied up to the 6th standard English are admitted to this course. The Artisan Course is of one year's duration and admission to this course is given to literate weavers. A number of scholarships are open for award to suitable candidates in this Institute.

The Institute is located in a good airy building situated in a convenient place for weavers. It is well staffed and equipped and is already attracting

students from the various parts of the Presidency. Two photographs showing the interior of the weaving shed and the preparatory machine room are attached for information.

45. **Aided Industrial Schools.**—I maintained touch with aided industrial schools by my membership of the Committee of Direction for Technical Education. When on tour I generally made it a point to visit the local industrial school.

46. **Advice to students and Practical Training.**—A number of requests were received during the year from students for advice and help. Students who wanted information or advice about Technical Education abroad were referred to the University Information Bureau.

Assistance was given to some students in the matter of admission to factories in India and abroad for practical experience and training. Following are the instances in which such assistance was given :—

(1) A student who had finished his Electrical Technology Course at the Indian Institute of Science was recommended by a Mill for help. He was introduced to a firm of Electrical Engineers who accepted him for practical experience.

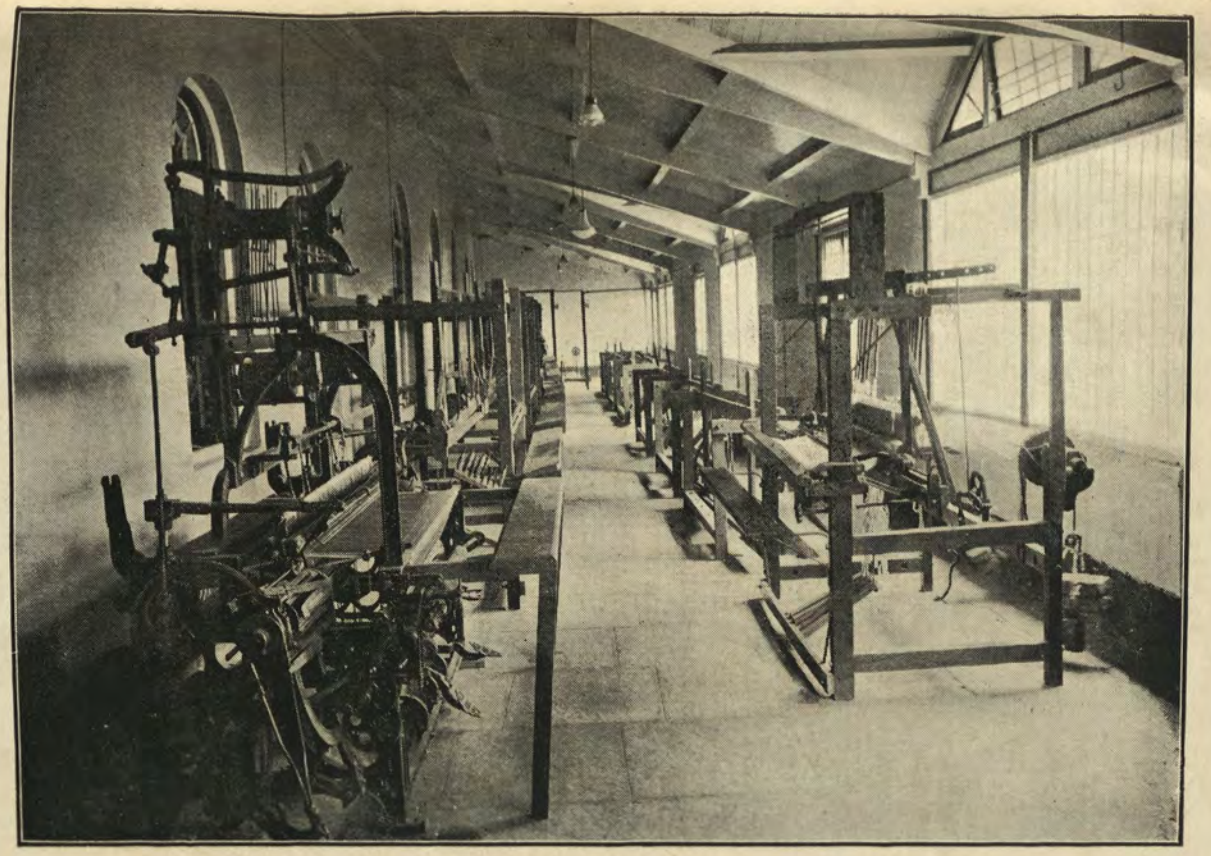
(2) An apprentice from another Mill was on the recommendation by this Department accepted by a firm of Electrical Engineers for practical training in Bombay.

(3) Arrangements were made for practical training of a student in Electrical Engineering in the Works of an English manufacturing concern in England.

(4) The holder of a scholarship in Radio Telegraphy from the Director of Public Instruction having completed his theoretical training in England applied to this Department for help for facilities for practical training. The Indian Radio Telegraph Co. was approached by the Department and they arranged with Marconi's Wireless Works at Chelmsford to admit the scholar for practical training.

47. **Advice to Public Bodies.**—During the year under review applications were received from several public bodies asking for advice and assistance in opening technical schools and arranging syllabus of courses for vocational education. The enquiries attended to are as follows :—

(1) The Bijapur Municipality requested the Department to advise them in connection with organisation of classes for vocational training in the primary schools at Bijapur. They had limited funds to begin with. A syllabus of courses with Hand Weaving and Dyeing was framed for them by this Department to begin with and they were advised to communicate further with this Department for other subjects later on when funds permitted an extension of work.



HAND WEAVING INSTITUTE, POONA: WEAVING SHED.

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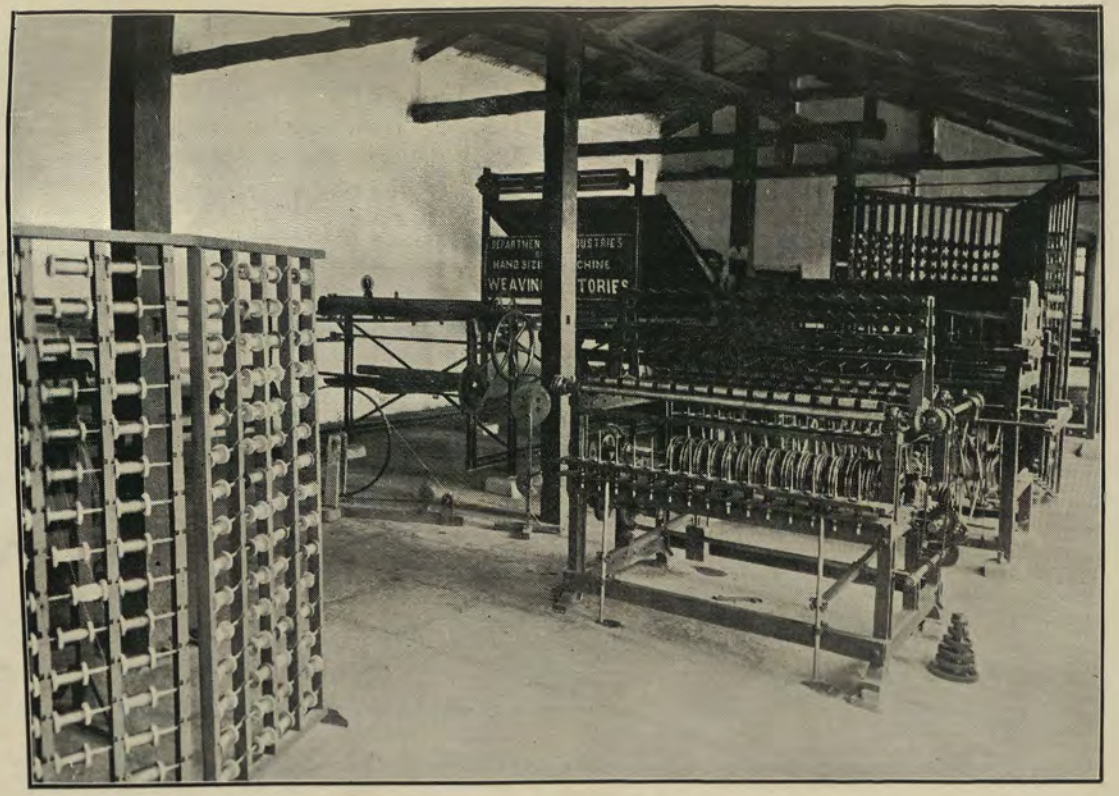

HAND WEAVING INSTITUTE, POONA: PREPARATORY MACHINE ROOM.

[*To face page 38*

(2) The Committee of Hazrat Shah Pirmohmed Shah Saheb Durga Sharif, Ahmedabad, desired to utilise some funds available from the Durga income for technical education to the boys of a section of the Muhammadan community. The question is being considered by this Department and negotiations are going on with the Committee.

(3) The Government Rural Training School, Narayangaon, was advised in connection with the proposed courses in some cottage industries for the school.

(4) The District Local Board, Ratnagiri, consulted this Department as to how one-twelfth of the octroi duty received by the Board can well be utilised in giving encouragement to local industries where possible. The question was discussed with the Secretary of the District Local Board and some preliminary suggestions in the matter were made. They are under the consideration of the Board.

(5) The Department was consulted by Government on the question of the desirability of opening a Technical School at Bijapur. A scheme was framed and submitted to Government. The question of opening a Technical School at Sholapur is under the consideration of this Department and a preliminary scheme has been forwarded to the authorities at Sholapur for consideration. Final proposals will be submitted to Government in due course.

SURVEYS

48. Report on the Village Tanning Industry by Mr. Gaitonde was published for the information of public this year. Recommendations made by the Surveyor as well as my recommendations are still under the consideration of Government.

Report on Hand Weaving Industry by Mr. S. V. Telang, Senior Weaving Assistant of this Department, contained the following recommendations :—

(1) Opening of a Central Hand Weaving Institute for the Presidency,
(2) Additional Dyeing Demonstration for the Presidency,
(3) Opening of two or three additional schools for agriculturists,
(4) Introduction of new designs amongst the weavers, and
(5) Spreading the use of up-to-date appliances.

Recommendations under headings (1) and (2) above have been given effect to during the year and one weaving school for *bona fide* weavers has been converted into a school for agriculturists.

Report on Art Crafts by Mr. G. P. Fernandez is still under the consideration of Government.

Proposals covering a comprehensive survey of the Fishing Industry were submitted to Government. As mentioned elsewhere, Government were pleased to direct that the survey originally conducted by Mr. W. H. Lucas, I.C.S., in the year 1908-09 should be brought up-to-date by the Collector of Salt Revenue.

Statistical work in connection with the proposed survey of vegetable oil industry has been carried out departmentally and proposals will be submitted to Government shortly.

EXHIBITIONS

49. It is the policy of this Department to participate in the Presidency and District Industrial and Agricultural Shows by deputing its Weaving Section Staff with a view to demonstrate improved methods in hand weaving, hand sizing, dyeing and calico printing as may be necessary at a particular Show or Exhibition.

During the year under review, the Department took part in the following Exhibitions and Shows : —

(1) One Weaving Demonstrator was deputed to Bijapur to demonstrate improved methods in hand weaving at the time of the opening ceremony of the Wilson Anti-Famine Institute from 7th to 9th June 1929.

(2) Demonstrations in improved methods of hand weaving, hand sizing and dyeing and calico printing were given at the last Swadeshi Bazar and Industrial Exhibition, Poona, held from the 5th September to the 13th October 1929.

(3) A demonstration in hand weaving was given at Khed-Shivapur Show held under the auspices of the Deccan Agricultural Association from the 22nd to the 24th December 1929.

(4) The Department took part in the Bordi Agricultural Show, District Thana, in demonstrating hand weaving by improved methods to agriculturists and weavers.

The demonstrations referred to above aroused considerable interest at the places at which they were held. Reference to these has been made elsewhere in the report.

MISCELLANEOUS ACTIVITIES OF THE DIRECTOR OF INDUSTRIES

50. Following are some of the miscellaneous activities of the Director :—

(1) The Director of Industries is an ex-officio Trustee of the Prince of Wales Museum. The Director was appointed a member of the sub-committee for building a new wing for Industries and Natural History Society in the Prince of Wales Museum. He was also appointed a member of the sub-committee appointed for making retrenchment in the budget of the Prince of Wales Museum. The Director attended 7 meetings out of the total number of 9 meetings held during the year.

(2) The Director of Industries is a nominated member of the Advisory Committee of the Royal Institute of Science. The Director was appointed a member of the sub-committee appointed by the Advisory Committee to draw up a scheme for a Department of Textile

Chemistry in the Royal Institute of Science. The Director attended all the meetings held in the year.

(3) The Director was appointed a member of the Committee of Direction for Technical Education vice the Director of Public Instruction. He attended all the meetings of this Committee held during the year.

(4) During the year under report, the Director was appointed a member of the Smoke Nuisances Commission.

(5) The Director of Industries submitted a written statement to the Hides Cess Enquiry Committee and also appeared before that Committee to give oral evidence. The Director was also appointed as a co-opted member of this Committee during its session in Bombay.

(6) The Director of Industries submitted a written statement to the Provincial Banking Enquiry Committee and also appeared before it to give oral evidence.

(7) The Director of Industries also gave oral evidence before the Depressed Classes and Aboriginal Tribes Committee.

(8) The Director of Industries submitted a written evidence before the Royal Commission on Labour.

51. Some of the miscellaneous activities of the Department are as under :—

(1) **Jail Industries.**—Government in the Home Department requested the Department to consider carefully the question of the construction of a power-loom weaving factory at the Nasik Road Central Prison to supply the requirements of the various Government Departments. The scheme was examined very carefully by this Department and detailed estimates and full particulars were prepared and submitted to Government with remarks and suggestions.

(2) The Director General of Commercial Intelligence and Statistics, Calcutta, was assisted in his work of compiling a glossary of terms for hand-made fabrics as used in this Presidency.

(3) **Scientific and Industrial Research, 1928-29.**—A summary of the progress of Scientific and Industrial Research during 1928-29 was sent to the Government of India for inclusion in the Annual Report of the Committee of the Privy Council for Scientific and Industrial Research, London. The material for the summary was furnished by some of the educational and scientific institutions in this Presidency.

Most of the research work that is being carried on in the colleges and institutes of the Presidency is of academic importance only. The most favoured branch of science in the Presidency appears to be Chemistry. In this branch most of the work done in organic chemistry is on chloral,

gitized with financial assistance from th
Government of Maharashtra
on 20 July, 2017

on the derivatives of benzoic acid and salicylic acids and on the condensation products obtained from the chloral and benzoic acids. Some of the work being done in this branch which may be of some technical interest is on alkaloids from plants and flowers found in this country and on the tannin contents of some plants. In physical chemistry, work is done in various fields, important one being on colloids and conductivity. When compared with other branches of chemistry, very little work is done in inorganic chemistry.

Next comes biology. In this branch, work is being done on chromosomal and cytological studies and pollen development of various plants and plant products. Useful work is being done on the morphology and other studies of rice plant, on photosynthesis taking place in plants and some work is being done on the industrial utilisation of sea-weeds.

In physics, very little work is being done.

Some work was also done on the milk and cattle problems of Bombay.

As most of the work is done for the purpose of writing thesis for higher degrees and as there is no common meeting place for the various workers directing the researches, there is hardly any co-ordination in the work done. Practically all the research is of scientific interest only. It is regrettable to note the paucity of research work of industrial importance. It is hoped, therefore, that a Central Research Council may be organised at an early date, so that it can bring about the desired co-ordination in the work which is being done at present and to encourage and where necessary organise Research Work of Industrial importance.

LIBRARY

52. A Library is attached to the Department of Industries which contains 2,954 books. This number includes reference books, reports, bulletins, statistical returns, etc. The library is being gradually added to, so as to increase its usefulness to the Department and the public interested in Industries. Many important technical journals are also regularly received in the Department.

The library is open for reference to the general public at any time during office hours on working days. It is gratifying to note that members of the public are taking advantage of this arrangement.

CONCLUSION

53. I have pleasure in recording that the staff of the Department worked efficiently and well throughout the year.

I have the honour to be,
Sir,
Your most obedient servant,
P. B. ADVANI,
Director of Industries.

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